Computer Science
GESTURE DRIVEN HUMAN COMPUTER INTERACTION

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The last major breakthrough in human computer interaction came in the early 1980s with the advent of the graphical user interface. The graphical interface with folders, files, and a trashcan work well because the desktop metaphor relates to our experiences in the real world. With the widespread proliferation of inexpensive video cameras, now more than ever people are using these devices, known as web cams, for videoconferencing over the Internet. The primary goal of this project is to utilize inexpensive "off the shell" web cams for an entirely new type of human computer interaction. This technology will utilize motion detection and pattern recognition theory to take commands from a user, interpret their physical gestures and act accordingly.

Often in engineering it's important to step back and challenge our most basic assumptions. At the same time, we have to be careful not to pursue an artificial HI (human interface) "Holy Grail". The key here is to *supplement* the user experience, to provide an additional means of interaction. We don't expect people to throw out their keyboards and mice. The gesture driven interface builds on the theory behind what makes graphical user interfaces great: using anthropomorphic metaphors from the real world. This is huge because it means you won't have to teach people how to use it; they'll already know how.

The idea is extremely simple. Here are just a few great examples of ordinary everyday people can put this technology to use in their daily lives. Imagine holding up three fingers and the computer recognizing this and automatically opening your email program to check for new messages. Or the countless times when you have 30 windows open and you need to get to something sitting on your desktop. Now of course that's easy to imagine because we've all been in that situation. With this technology, you'll be able to wave your hand across the screen and the computer will automatically hide every single one of those windows! Lets say you are done for the day and are ready to go home. To shutdown your computer, simply wave "good bye" and it will automatically sleep. Here's yet another scenario: You take a lunch break and when you walk away from your cubical you forget to lock the screensaver. Corporate security is of utmost importance for many companies, especially if a user has confidential information on their machine. With this technology, the system could automatically lock the screensaver when the user leaves. But perhaps what what's more exciting is when the user returns from lunch and sits back down at their desk, the computer automatically detects the specific individual *(and only that individual)* and unlocks the screensaver. These are just a few quick illustrations of the potential of this technology, and how it can impact the daily lives of millions of people. Implementing just one of the aforementioned ideas would be a breakthrough in human computer interaction.